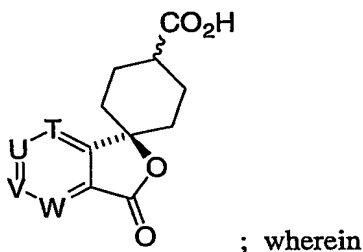


## WHAT IS CLAIMED IS:

1. A process for preparing a compound of the formula IC, or a salt thereof,



IC

T, U, V and W are each independently selected from the group consisting of:

- (1) nitrogen, and
- (2) methine,

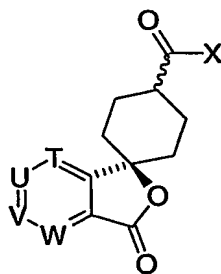
wherein the methine group is unsubstituted or optionally substituted with a substituent selected from the group consisting of:

- (a) halogen,
- (b) lower alkyl,
- (c) hydroxy, and
- (d) lower alkoxy, and

wherein at least two of T, U, V, and W are methine;

comprising the steps of:

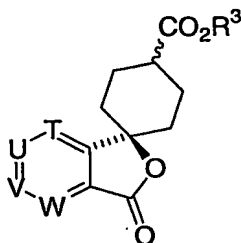
- (a) forming an spiro lactone acid halide of formula E



E

wherein X is chlorine or bromine, and T, U, V, and W are as defined above, by treating the compound of formula IC with a halogenating agent in a solvent;

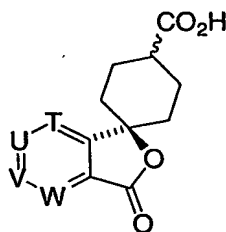
- (b) forming a spirolactone ester of formula F



F

wherein  $R^3$  is selected from the group consisting of tert-butyl, methyl cyclohexyl, methyl cyclopentyl, and neopentyl, and T, U, V and W are as defined above, by treating the spirolactone acid halide of formula E with a base and an alcohol in a solvent;

- (c) forming a spirolactone acid of formula IC



IC

wherein T, U, V and W are defined as above, by hydrolyzing the spirolactone ester of formula F with an aqueous acid; and

- (d) isolating the resulting product.

2. The process of Claim 1 wherein the solvent of step (a) is selected from the group consisting of chloroform, ethyl acetate, tetrahydrofuran, dimethoxyethane, diglyme, 2-methyl tetrahydrofuran, 1,4-dioxane and diethoxymethane.

3. The process of Claim 2 wherein the solvent of step (a) is tetrahydrofuran.

4. The process of Claim 1 wherein the halogenating agent in step (a) is selected from the group consisting of phosphorus oxychloride, oxalyl chloride, phosphorus trichloride, phosphorus tribromide, thionyl chloride, thionyl bromide and oxalyl bromide.

5. The process of Claim 4 wherein the halogenating agent in step (a) is phosphorus oxychloride.

6. The process of Claim 1 wherein the spirolactone acid halide of formula E in step (a) is a spirolactone acid chloride.

7. The process of Claim 1 wherein step (a) further comprises a catalyst.

8. The process of Claim 7 wherein the catalyst of step (a) is dimethyl formamide.

9. The process of Claim 1 wherein the base of step (b) is selected from the group consisting of *N,N,N',N'*-tetramethylethylenediamine, triethyl amine, *N,N*-diisopropylethyl amine, *N,N*-dimethylethyl amine, pyridine, collidine, 1,8-diazabicyclo[5.4.0]undec-7-ene, *N*-methyldmorpholine, and *N,N,N',N'*-tetramethyl-1,6-hexanediamine.

10. The process of Claim 9 wherein the base of step (b) is *N,N,N',N'*-tetramethylethylenediamine.

11. The process of Claim 1 wherein the alcohol of step (b) is selected from the group consisting of tert-butyl alcohol, methyl cyclohexanol, methyl cyclopentanol, and neopentyl alcohol.

12. The process of Claim 11 wherein the alcohol of step (b) is tert-butyl alcohol.

13. The process of Claim 1 wherein the solvent in step (b) is selected from the group consisting of tetrahydrofuran, dimethoxyethane, diglyme, 2-methyl tetrahydrofuran, 1,4-dioxane and diethoxymethane.

14. The process of Claim 13 wherein the solvent in step (b) is tetrahydrofuran.

15. The process of Claim 1 wherein step (b) further comprises a salt.

16. The process of Claim 15 wherein the salt of step (b) is selected from the group consisting of lithium bromide, lithium chloride, lithium iodide, lithium perchlorate and lithium tetrafluoroborate.

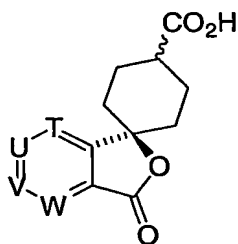
17. The process of Claim 16 wherein the salt of step (b) is lithium chloride.

18. The process of Claim 1 wherein the aqueous acid of step (c) is selected from the group consisting of sulfuric acid, hydrochloric acid, hydrobromic acid, phosphoric acid and formic acid.

19. The process of Claim 18 wherein the aqueous acid of step (c) is is sulfuric acid.

20. The process of Claim 1 further comprising the steps of

(e) adding a solvent to the compound of formula IC,

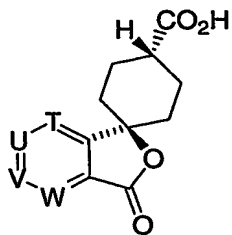


IC

wherein T, U, V and W are as defined above, to form a mixture;

(f) adding an acid to the mixture of step (e) to form a mixture; and

(g) aging the mixture of step (f) for a time and under conditions effective to afford the compound IA



IA

wherein T, U, V and W are as defined above, or a salt thereof.

21. The process of Claim 20 wherein the solvent of step (e) is selected from the group consisting of dimethoxyethane, acetonitrile, tetrahydrofuran, or a mixture thereof.

5 22. The process of Claim 21 wherein the solvent of step (e) is tetrahydrofuran.

23. The process of Claim 20, wherein the acid of step (f) is selected from the group consisting of hydrochloric acid, hydrobromic acid, tartaric acid, methane sulfonic acid, toluene sulfonic acid, succinic acid, and sulfuric acid.

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24. The process of Claim 23 wherein the acid of step (f) is hydrochloric acid.

25. The process of Claim 20, wherein step (g) is aged at a temperature of about 10°C to 60°C.

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26. The process of Claim 25, wherein step (g) is aged at a temperature of about 25°C for about 3 hours.

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27. The process of Claim 20 further comprising the step (h) of isolating the compound of formula IA, or a salt thereof.

28. The process of Claim 1 wherein T, V and W are methine, wherein the methine group is unsubstituted or optionally substituted with a substituent selected from the group consisting of

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- (a) halogen,
- (b) lower alkyl,
- (c) hydroxy, and
- (d) lower alkoxy; and

U is nitrogen.

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29. The process of Claim 29 wherein T, V and W are unsubstituted methine; and U is nitrogen.

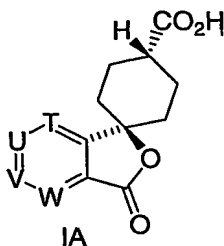
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30. The process of Claim 1 wherein T, U, V and W are methine, wherein the methine group is unsubstituted or optionally substituted with a substituent selected from the group consisting of

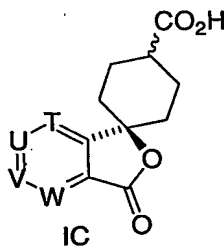
- (a) halogen,
- (b) lower alkyl,
- (c) hydroxy, and
- (d) lower alkoxy.

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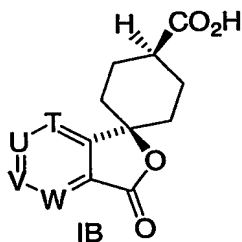
31. The process of Claim 1 wherein the amount of trans isomer IA



in the compound of structural formula IC



10 is increased relative to the amount of cis isomer IB



in the compound of structural formula IC,

wherein T, U, V and W are each independently selected from the group consisting of:

- (1) nitrogen, and
- (2) methine,

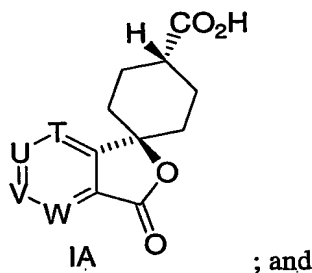
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wherein the methine group is unsubstituted or optionally substituted with a substituent selected from the group consisting of:

- (a) halogen,
- (b) lower alkyl,
- (c) hydroxy, and
- (d) lower alkoxy, and

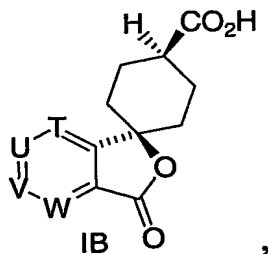
wherein at least two of T, U, V, and W are methine.

32. A composition comprising about 83 % to 52% of compound IA



; and

about 17% to 48% of compound IB



,

wherein T, U, V and W are each independently selected from the group consisting of:

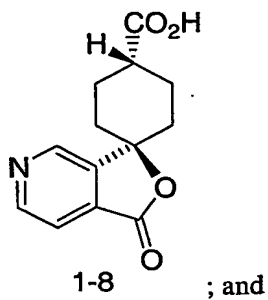
- (1) nitrogen, and
- (2) methine,

wherein the methine group is unsubstituted or optionally substituted with a substituent selected from the group consisting of:

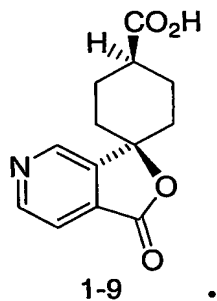
- (a) halogen,
- (b) lower alkyl,
- (c) hydroxy, and
- (d) lower alkoxy, and

wherein at least two of T, U, V, and W are methine.

33. The composition of Claim 32 comprising about 79% of compound 1-8

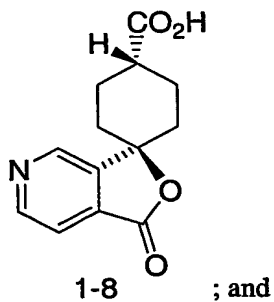


about 21% of compound 1-9



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34. The composition of Claim 32 comprising about 83% of compound 1-8



about 17% of compound 1-9



